

Customer No.: 31561
Application No.: 10/709,374
Docket No.: 10657-US-PA

AMENDMENTS

To the Claims:

Claim 1. (currently amended) A wide viewing angle liquid crystal display, comprising:

- a back light unit;
- an optical compensation circular polarizer unit disposed set over the back light unit;
- an optically self-compensated birefringence liquid crystal panel disposed set over the optical compensation circular polarizer unit; and
- an optical compensation circular analyzer unit disposed set over the optically self-compensated birefringence liquid crystal panel, and the optical compensation circular analyzer unit set comprising:
 - an analyzer plate, wherein the absorption axis of the analyzer plate is perpendicular to the absorption axis of the polarizer plate, and the polarizer plate form an included angle of between 40° to 50° with the alignment direction of the liquid crystal panel;
 - a second uniaxial quarter-wave plate sandwiched between the analyzer plate and the optically self-compensated birefringence liquid crystal panel, wherein the optical axis of the second uniaxial quarter-wave plate forms an included angle of about 45° with the absorption axis of the analyzer plate; and
 - a second biaxial compensation film sandwiched between the second uniaxial quarter-wave plate and the optically self-compensated birefringence liquid crystal panel.

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wherein the second biaxial compensation film has principal refractive indices n_x' , n_y' and n_z' that satisfy the following inequality relations: $n_x' > n_y' > n_z'$ and $4 > (n_x' - n_z') / (n_x' - n_y') > 2$, and the principal axis with the refractive index n_x' is perpendicular to the alignment direction of the liquid crystal panel.

Claim 2. (withdrawn) The liquid crystal display of claim 1, wherein the optical compensation circular polarizer unit further comprises:

a polarizer plate; and

a first biaxial compensation film sandwiched between the polarizer plate and the liquid crystal panel.

Claim 3. (withdrawn) The liquid crystal display of claim 2, wherein the first biaxial compensation film has principal refractive indices n_x , n_y and n_z that satisfies the following inequality relations: $n_x > n_y > n_z$ and $4 > (n_x - n_z) / (n_x - n_y) > 2$, and the principal axis with the refractive index n_x forms an included angle between 40° to 75° with the alignment direction of the liquid crystal panel.

Claim 4. (withdrawn) The liquid crystal display of claim 2, wherein the optical compensation circular analyzer unit further comprises:

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an analyzer plate, wherein the absorption axis of the analyzer plate is perpendicular to the absorption axis of the polarizer plate, and the absorption axis of the polarizer plate forms an included angle between 40° to 75° with the liquid crystal panel;

a uniaxial quarter-wave plate sandwiched between the analyzer plate and the liquid crystal panel, wherein the optical axis of the second uniaxial quarter-wave plate forms an included angle of about 45° with the absorption axis of the analyzer plate; and

a second biaxial compensation film sandwiched between the second uniaxial quarter-wave plate and the liquid crystal panel.

Claim 5. (withdrawn) The liquid crystal display of claim 4, wherein the second biaxial compensation film has principal refractive indices $n_{x'}$, $n_{y'}$ and $n_{z'}$ that satisfy the following inequality relations: $n_{x'} > n_{y'} > n_{z'}$ and $(n_{x'} - n_{z'}) / (n_{x'} - n_{y'}) > 6$, and the principal axis with the refractive index $n_{x'}$ is perpendicular to the alignment direction of the liquid crystal panel.

Claim 6. (original) The liquid crystal display of claim 1, wherein the optical compensation circular polarizer unit further comprises:

a polarizer plate;

a first uniaxial quarter-wave plate sandwiched between the polarizer plate and the liquid crystal panel, wherein the optical axis of the first uniaxial quarter-wave plate and an absorption axis of the polarizer plate form an included angle of about 45° ; and

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a first biaxial compensation film sandwiched between the first uniaxial quarter-wave plate and the liquid crystal panel.

Claim 7. (original) The liquid crystal display of claim 6, wherein the first biaxial compensation film has principal refractive indices n_x , n_y and n_z that satisfy the following inequality relations: $n_x > n_y > n_z$ and $(n_x - n_z)/(n_x - n_y) > 6$, and the principal axis with the refractive index n_x is perpendicular to the alignment direction of the liquid crystal panel.

Claim 8. (withdrawn) The liquid crystal display of claim 6, wherein the optical compensation circular analyzer unit further comprises:

an analyzer plate, wherein the absorption axis of the analyzer plate is perpendicular to the absorption axis of the polarizer plate, and the polarizer plate form an included angle of between 40° to 75° with the alignment direction of the liquid crystal panel; and

a second biaxial compensation film sandwiched between the analyzer plate and the liquid crystal panel.

Claim 9. (withdrawn) The liquid crystal display of claim 8, wherein the second biaxial compensation film has principal refractive indices n_x' , n_y' and n_z' that satisfy the following inequality relations: $n_x' > n_y' > n_z'$ and $4 > (n_x' - n_z')/(n_x' - n_y') > 2$, and the principal axis with the

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refractive index n_x forms an included angle of between 20° to 50° with the alignment direction of the liquid crystal panel.

Claim 10-11. (cancelled)

Claim 12. (withdrawn) A wide viewing angle liquid crystal display, comprising:

a back light unit;

an optical compensation circular polarizer unit set over the back light unit;

a liquid crystal panel set over the optical compensation circular polarizer unit;

an optical compensation circular analyzer set over the liquid crystal panel;

a cholesteric liquid crystal layer; and

a first biaxial compensation film sandwiched between the cholesteric liquid crystal layer and the liquid crystal panel, wherein the first biaxial compensation film has principal refractive indices n_x , n_y and n_z that satisfy the following inequality relations: $n_x > n_y > n_z$, and the principal axis with the refractive index n_x is perpendicular to the alignment direction of the liquid crystal panel.

Claim 13. (withdrawn) The liquid crystal display of claim 12, wherein the optical compensation circular analyzer unit furthermore comprises:

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an analyzer plate, wherein the absorption axis of the analyzer plate is perpendicular to the absorption axis of the polarizer plate, and the polarizer plate forms an included angle of between 15° to 50° with the alignment direction of the liquid crystal panel;

a uniaxial quarter-wave plate sandwiched between the analyzer plate and the liquid crystal panel, wherein the optical axis of the uniaxial quarter-wave plate forms an included angle of about 45° with the absorption axis of the analyzer plate; and

a second biaxial compensation film sandwiched between the uniaxial quarter-wave plate and the liquid crystal panel, wherein the second biaxial compensation film has principal refractive indices n_x' , n_y' and n_z' that satisfy the following inequality relations: $n_x' > n_y' > n_z'$, and the principal axis with the refractive index n_x' is perpendicular to the alignment direction of the liquid crystal panel.

Claim 14. (withdrawn) The liquid crystal display of claim 12, wherein the optical compensation circular analyzer unit furthermore comprises:

an analyzer plate, wherein the absorption axis of the analyzer plate is perpendicular to the absorption axis of the polarizer plate, and the polarizer plate forms an included angle of between 15° to 50° with the alignment direction of the liquid crystal panel; and

a second biaxial compensation film sandwiched between the analyzer plate and the liquid crystal panel, wherein the second biaxial compensation film has principal refractive indices n_x' ,

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ny' and nz' and the principal axis with the refractive index nx' forms an included angle of between 20° to 50° with the alignment direction of the liquid crystal panel.